

REMARKS

The Office Action of April 2, 2004 has been reviewed and the Examiner's comments carefully considered. The present Amendment amends claims 1 and 4 in accordance with the originally-filed specification. Support for these amendments can be found, for example, on page 6, lines 6-11 of the originally-filed specification. Accordingly, no new matter has been added. Claims 1-10 remain in this application, with claims 1 and 4 in independent form.

The Examiner is thanked for withdrawing the rejection of claims 1, 3, 4 and 7-10 in view of the Sharp patent, as well as the rejection of claims 2 and 6 over the Sharp patent in view of the Bartelloni patent and of claim 5 over the Sharp patent in view of the Mitchell patent. Specifically, the Examiner has indicated that the Declaration Under 37 C.F.R. § 1.132, as well as the previously-filed Amendment, were effective in overcoming these rejections. In the present Office Action, the Examiner has now rejected pending claims 1-10 in view of a different primary reference, namely U.S. Patent No. 5,167,352 to Robbins.

In particular, claims 1, 3, 4 and 7-10 stand rejected under 35 U.S.C. § 102(b) as being anticipated by the Robbins patent. Claims 2 and 6 stand rejected under 35 U.S.C. § 103(a) as being obvious over the Robbins patent in view of the previously-cited Bartelloni patent. Finally, claim 5 stands rejected under 35 U.S.C. § 103(a) as being obvious over the Robbins patent in view of the previously-cited Mitchell patent. In view of the above amendments and the following remarks, Applicant respectfully requests reconsideration of these rejections.

Independent claim 1 of the present application, as amended, is directed to an underground reservoir for storing liquid products, consisting of an inner, main reservoir and an outer, secondary reservoir. The outer, secondary reservoir consists of a coating layer, and the coating layer consists of an inner layer made from a paper material and an outer layer made of

a structural polyurethane. The polyurethane is made without the addition of any solvents.

Independent claim 4 of the present application, as amended, is directed to a process for manufacturing an underground reservoir. This method includes the steps of providing an inner, main reservoir and covering an outer surface of the main reservoir with a first coating layer consisting of a paper material, and applying a second coating layer consisting of polyurethane over the first coating layer. The polyurethane is made without the addition of any solvents.

The Robbins patent is directed to a double wall tank system. In particular, the system of the Robbins patent is directed to a double wall tank for the underground storage of fluids, and the tank is claimed to be more simple and more economical to manufacture. Further, the tank or underground reservoir of the Robbins patent is directed to a double-walled reservoir having an inner, main tank made of steel and an outer, secondary containment tank made of a plastic resin. As illustrated in Figs. 12 and 13 of the Robbins patent, the outer, secondary containment tank may be made with or without a reinforcement material, and the tank also includes an intermediate barrier layer made of a number of porous materials.

As seen in Figs. 12 and 13 of the Robbins patent, the outer, secondary containment tank may include an intermediate porous barrier layer 18c, which is composed of one-sided corrugated sheet material 74, such as one-sided corrugated cardboard. With reference to Figs. 14 and 15, the one-sided corrugated sheet material 74 includes a single flat supporting lamination 76, which has an exposed flat side 78 and a covered side 80, to which the corrugated lamination 82 is bonded. The corrugated lamination 82 has an exposed side 84, which consists of alternating, parallel ridges 86 and grooves 88, and the sheet material 74 is made over the entire outer surface of the inner tank shell 12, with the exposed corrugated side 84 facing the tank shell

12. A fiber-reinforced resin material is then applied over the exposed flat side 78 of the supporting lamination 76, and the outer layer of resin may be formed with or without the fiber-reinforcement layer and may be made from a polyurethane. See column 16, lines 44-66 of the Robbins patent.

The Bartelloni patent is directed to latex-containing papers, and it appears that the Examiner continues to use the Bartelloni patent for its teaching of specialty paper applications, such as the use of latex papers as liquid-resistant papers for use in manufacturing coated papers and boards. Accordingly, it appears that the Examiner believes that the Bartelloni patent teaches that latex papers can be used in tank construction, asserting that the polymeric materials added as latex confer on the paper impermeability, flexibility and resistance. In addition, the Examiner continues to use the Mitchell patent for its teaching of the common surface preparation technique of abrasive blasting of the steel, also asserting that this is a well-known technique in the art.

The primary reference, namely the Robbins patent, presents a structure that is wholly distinguishable from the present invention. In particular, the Robbins patent discloses a construction of a double-walled reservoir that intends to prevent any possible leakage from the inner, main tank made of steel, which is therefore more susceptible to corrosion, from reaching and causing any damages to the environment. The outer, secondary containment tank is a prior art structure that is described in Standard UL 1746, Part III, pages 17.4, dated November 28, 1989. Applicant respectfully submits that the Robbins patent is focused on the intermediate porous barrier layer positioned around the inner, main tank and how it can better direct any fluid leaking therefrom to the bottom part of the double-walled reservoir, between the inner and the outer tanks. More specifically, the Robbins patent shows an intermediate porous barrier layer 18 that may consist of any open-cell or open-communication material that allows the free flow

of both liquid and gas throughout its entire extent. See Figs. 1 and 3. Further, the Robbins patent specifically defines the intermediate porous barrier layer 18 as being “a layer of solid material which has continuously communicating interstitial spaces,” and the disclosure of the Robbins patent clearly recites open-cell polyurethane or open-cell high density polyurethane as suitable materials for the intermediate porous barrier layer.

The Robbins patent also discusses that the open-cell porous material can be substituted by other materials, such as channel-mesh, one side corrugated cardboard and other similar materials. See Figs. 8, 9, 12 and 14. Accordingly, the Robbins patent is specifically focused on the manufacture of interstices of different materials to improve the speed of flow of any fluid leaking from the inner tank to the bottom of the reservoir. However, it should be noted that the corrugated cardboard referenced in the Robbins patent **is not the inner layer of the external coating**, but instead is in the intermediate porous barrier layers separating the inner, main tank and the outer, secondary tank, which is preferably made from a reinforced fiber material. Therefore, the corrugated paper discussed in the Robbins patent is an **intermediate** porous barrier layer that defines a physical interstice between the inner tank and the outer tank for facilitating the passage of any liquid leaking from the inner tank.

With respect to the underground reservoir of the present invention, the paper, whether impervious or not, is part of the bi-component outer tank, and is used only to prevent the polyurethane from adhering to the inner tank. Such a structure is specifically defined in both independent claims 1 and 4 of the present application. As noted in the previously-submitted Amendment, both independent claims 1 and 4 restrict the structure and composition of the layers as detailed in these claims. The phrase “consisting of” is a closed term and is restrictive, thusly precluding the addition of other layers and materials not specifically set forth in this claim.

Therefore, Applicant respectfully submits that the Robbins patent does not teach or suggest an underground reservoir that consists of an inner, main reservoir and an outer, secondary reservoir that consists of a coating layer, where the coating layer consists of an inner layer made from a paper material and an outer layer made of a structural polyurethane, as specifically set forth in both independent claims 1 and 4 of the present application.

Still further, and as a matter of historical note, in 1989 when the application underlying the Robbins patent was filed, the forming of an outer tank shell made of polyurethane without the addition of any solvents was simply impossible. Instead, a polyurethane resin, as generically cited in the Robbins patent without the addition of any solvents or any reinforcement was only developed in the mid '90s. As support to this, Applicant respectfully refers the Examiner's attention to "Chemistry and Technology of Polyurethanes", Vilar, W., 3rd Edition (2002). In particular, this reference states that:

"The commercial development of PU's began initially in Germany in the end of the thirties, with the production of rigid foam, adhesives, and coatings. PU elastomers originated in the forties, in Germany and England.

During Second World War the development of PU's was discontinued, however since 1946 enormous growth could be observed in this market. The fifties registered the commercial development of PU's as flexible foams. During the sixties, the use of chlorofluorocarbons (CFC's) as blowing agents in rigid foams resulted in extended use of this material in thermal insulation.

In the seventies the semi-flexible and semi-rigid molded foams covered with thermoplastic materials were broadly used in the automotive industry. In the eighties, a commercially relevant technique, reaction injection molding (RIM) was developed, giving impulse to studies on the relationships between molecular structure and properties of PU's.

Due to environmental concern, in the nineties and in the beginning of the present millennium, researches have been directed to the substitution of CFC's considered harmful to the layer of terrestrial ozone, so that systems have been developed which are free of volatile organic compounds (VOC's), as well as PU's recycling."

(Emphasis added).

Therefore, it is clear from this reference material that, back in 1989, Robbins could only be referring to mono-components paints having polyurethane as a basis, which at that time were referred to as "polyurethane resins". However, it should be noted that these paints require the use of a solvent and of a catalyst, and they were not structural by themselves. In other words, they were merely a coat of paint applied over the outer surface of a structure. Therefore, in addition to being absolutely free of any volatile organic compounds (VOCs), the polyurethane used in the present invention is formed by a system of two components, namely isocyanate and poliol, which chemical reaction results in the formation of structural polyurethane. The present invention uses polyurethane that is made without the addition of any solvents. Therefore, the Robbins patent could not be referring to the use of polyurethane made without the addition of any solvents, which is specifically claimed in both independent claims 1 and 4 of the present application, as amended.

For the foregoing reasons, independent claims 1 and 4 are not anticipated by or rendered obvious over the Robbins patent, the Bartelloni patent, the Mitchell patent or any of the prior art of record, whether used alone or in combination. There is no hint or suggestion in any of the references cited by the Examiner to combine these references in a manner which would render the invention, as claimed, obvious. Reconsideration of the rejection of independent claims 1 and 4 is respectfully requested.

Claims 2 and 3 depend directly from and add further limitations to independent claim 1 and are believed to be allowable for the reasons discussed hereinabove in connection with independent claim 1. Further, claims 5-10 depend either directly or indirectly from and add further limitations to independent claim 4 and are believed to be allowable for the reasons discussed hereinabove in connection with independent claim 4. Therefore, for all the above

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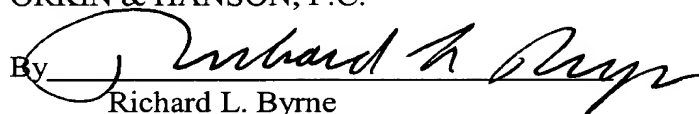
reasons, reconsideration of the rejections of claims 2, 3 and 5-10 is respectfully requested.

For all the foregoing reasons, Applicant believes that claims 1-10, as amended, are patentable over the cited prior art and are in condition for allowance. Reconsideration of the rejections and allowance of all pending claims 1-10 are respectfully requested.

Respectfully submitted,

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